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ABSTRACT

Most clinical training programs attempt to produce psychologists who are both skilled research scientists and practitioners. This scientist-practitioner or Boulder Model, named for the 1950 conference on clinical psychology held in Boulder, Colorado, has been the subject of much scholarly debate. A study was undertaken to examine the career goals and scholarly productivity of 176 clinical psychology graduate students from 16 doctoral programs approved by the American Psychological Association. Students were surveyed via telephone (N=140) or via mail (N=36). The survey questionnaire focused on clinical interest, research interest, teaching interest, scholarly productivity, and miscellaneous student and advisor characteristics. The results revealed that programs differed widely with respect to level of student scholarly productivity (e.g. publications), interest in research, and interest in clinical work. Across programs, substantial support was obtained for the hypothesis that individual students generally choose to specialize in either clinical work or research only and rarely choose to work extensively in both areas. Students, however, did not select research and clinical orientations with equal frequency; a predominantly clinical orientation emerged. A small number of programs seemed to produce students with equal interest in research and clinical practice. Findings are discussed in terms of their implications for the Boulder Model. (NB)

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Professional Interests and Scholarly Productivity of Clinical Psychology Graduate Students

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Abstract

The career goals and scholarly productivity of 176 clinical psychology graduate students from 16 APA-approved PhD programs were examined. Students were surveyed via telephone (n = 140) or via mail (n = 36). Programs differed widely with respect to level of student scholarly productivity (e.g. publications), interest in research, and interest in clinical work. Across programs, substantial support was obtained for the hypothesis that individual students generally choose to specialize in either clinical work or research only rarely choose to work extensively in both areas. Students, however, did not select research and clinical orientations with equal frequency; a predominantly clinical orientation emerged. A small number of programs, though, seemed to produce students with equal interest in research and clinical practice. Findings are discussed in terms of their implications for the scientist-practitioner or Boulder Model.

Training Boulder Model Clinicians

At present, most clinical training programs attempt to produce psychologists who are both skilled research scientists and practitioners. Since its inception, this scientist-practitioner or Boulder Model, named for the 1950 conference on clinical psychology held in Boulder, Colorado, has been the subject of frequently scholarly debate (e.g. Albee, 1970; Barlow, 1981; Korman, 1974; Marwit, 1983; Meehl, 1971; Perry, 1979; Peterson, 1976a, 1976b; Sarason, 1981; Schneider, 1981, 1985). Proponents of the model contend that the problems encountered in treating clients generate hypotheses that can be tested empirically, and that in turn, findings from these empirical tests can enrich clinical practice. Such a model seems not only viable, but prudent (see Meltzoff, 1984; Shakow, 1972). Sarason (1981) and Albee (1970) have argued cogently, however, that the Boulder Model was at least as much the product of economic and political events (e.g. increased federal funding for mental health services) as of humanitarian and scholarly concerns. But whatever incentives the Boulder Model's framers might have had, they fully expected that clinical PhD students would be researchers, scientists, and scholars first, and practitioners second (Garfield, 1966; Kelly & Fiske, 1950; Peterson, 1976b).

Despite these expectations, the collective record of the first generation of scientist-practitioners suggests that the substantial advance of clinical psychologists as applied professionals might have been made at the expense of clinical psychologists as scientists. It has been found that the majority of clinical psychologists consider themselves primarily therapists and diagnosticians, work in clinical service settings, and devote the majority of their professional time to service related activities. Only a

minority consider themselves primarily researchers and teachers, work in academic settings, and devote the majority of their professional time to research related activities. Given these strong professional interests, it is not surprising that as a group, they have published little if at all (Barlow, 1981; Bornstein & Wollersheim, 1978; Garfield & Kurtz, 1976; Kelly, Goldberg, Fiske, & Kilkowski, 1978; Leitenberg, 1974; Schneider, 1981). Moreover, Barlow (1981) has observed that many clinical psychologists do not use clinical research findings as a basis for treatment decisions. Similarly, many psychology department clinics, which exist in part to provide students with Boulder role models, generally fail to integrate clinical and research activities and thus perpetuate the dichotomy between clinical research and practice (Serafica & Harway, 1980).

It is possible that the characteristics which predict success and motivation to succeed in research differ from those which predict success and motivation to succeed in clinical practice. There is, in fact, some evidence that clinicians and researchers differ on a variety of personality attributes (e.g. Jones cited in Hirschberg & Itkin, 1978). These differences may account for clinicians' difficulty integrating research and practice. Some have proposed, however, that clinicians' generally limited interest in scientific research may not be the product of personality structures but of such prosaic realities as job pressures and employment prospects (Schneider, 1981 and Perry, 1979). If this is correct, then one would expect that clinical graduate students who are relatively protected from such realities (at least in comparison to their professors and supervisors) would more closely approximate a combined orientation than their teachers. In this paper, we investigated whether students who are freer to move

between research and practice are more balanced in their orientations, and whether differences in training programs may influence student interests. Our aim was neither to praise nor to criticize the Boulder Model. Rather, we take a more limited aim of studying Boulder practitioners in training so as to accurately describe them and the influences that may enhance or hamper their development as researchers.

Although much has been written about the Boulder Model, the debate has remained largely theoretical. Moreover, those papers that have dealt empirically with the model focus on PhD level clinicians (e.g., Garfield & Kurtz, 1976; Schneider, 1981). Kelly & Fiske (1950) have provided a thorough examination of the first psychology VA interns but it is difficult to generalize from their work to current students. First, their primary intention was to evaluate the selection and training procedure of the VA internship program. Thus, their sample was limited to VA interns. Second, Kelly and Fiske's sample was drawn from the first generation of scientist practitioners. Because these interns received their training when the scientist-practitioner model was in its infancy, it is not surprising that they were largely unable to integrate research and practice. The present study was conducted nearly forty years later. We felt that if the model was viable, sufficient time had passed for psychology to make it work. Although clinical students have been studied more recently by Marwit (1983), he did not examine scholarly productivity which is perhaps the most objective measure of the model's success.

Purpose of the present study. The present study examined the professional interests, aspirations, and scholarly productivity of clinical psychology graduate students. It was hypothesized that most students would choose either the orientation of

the clinician or that of the researcher and that only a few would choose both. It was also hypothesized that advisor and program scholarly reputation and productivity would be associated with student interests. It was further hypothesized that student interests and scholarly productivity would vary by program. Finally, an attempt was made to predict students' professional interests from these other variables.

Method

Subjects and Sampling Procedure

Program selection. First, fifteen APA-approved clinical psychology programs and four alternates were selected randomly, stratified on the basis of program size (estimated by 1981 entering class size) and type of university (public or private). Program characteristic data were obtained from *Graduate Study in Psychology: 1982-1983* (APA, 1981). Department chairs were then sent a letter describing the study and requesting their participation. The general theoretical framework, purpose and procedure but not specific hypotheses were described and a copy of the questionnaire was enclosed. Letters were followed by telephone calls. Of the 15 program chairs contacted in the initial mailing, 10 agreed to participate; as requested, they provided lists of names, telephone numbers and addresses of currently enrolled clinical psychology graduate students. Three of the original 15 declined; two others agreed but sent lists with incomplete information. Both of these programs were used in a supplementary mail survey. Four replacement schools were obtained for the declining or incompletely participating programs. Thus, there were 14 programs in the telephone survey and 16 in the combined telephone-mail survey. The sample composition, with respect to program size and type, was in proportion to the population of graduate

programs in clinical psychology (see Table 1).

Insert Table 1 about here

Subject selection and response rate. Ten students were selected at random from each of the 14 programs included in the telephone survey. A total of 20 alternate students (from all 14 programs) were selected at random to replace those who either declined, were unable or were unavailable (after five attempts on various days of the week at varying times of the day) to participate.

At the point of first contact, students were informed that the study was concerned with achievement motivation, interests and aspirations of clinical psychology graduate students. They were not told specific hypotheses. To improve the response rate and to check for experimenter bias, questionnaires were mailed to students whom the investigator was unable to reach via telephone by the telephone cut-off date (February 5, 1983). The response rate for all 160 students selected for the telephone survey was 87.5% (n = 140) by telephone and 94.37% (n = 151) by telephone and mail. This response rate compares favorably with similar surveys conducted solely via mail. For example, Garfield and Kurtz (1976) and Kelly et al., (1978) had 69% and 81% response rates, respectively.

Questionnaires were also mailed to all students on the lists sent by the two programs which agreed to participate but were not used for the telephone survey (n = 38). Of these 38 students, 25 (65.75%) returned the questionnaires by the cut-off date (March 30, 1983). Thus, there were 140 students surveyed via telephone and 36 via

mail.

Subject characteristics. In all, 176 clinical psychology graduate students, from 16 APA-approved programs participated in the combined telephone and mail survey. There were 80 (45.45%) men and 96 (54.55%) women. Thirty-five (19.9%) were first year students; 50 (28.4%) were second year; 45 (25.6%) were third year; 30 (17%) were fourth year; 14 (8.0%) were fifth year and beyond; for two students (1.2%), year was unavailable. Eighty-one (46%) had master's degrees: 59 (33.5%) in psychology; 22 (12.5%) in other disciplines. The students ranged in age from 21 to 47 (mean = 27.21, S.D. = 4.39).

Procedure

Telephone interviews were conducted either at the time of first contact or, if the student preferred, by appointment with the interviewer at some mutually convenient later date. The interview was conducted by the first author and took approximately 60 minutes to complete. To minimize experimenter bias, items were read directly from the questionnaire with clarification provided as needed; queries for experimenter biases were later conducted. As a second precaution to eliminate bias, mail surveys were sent to an independent sample. The mail survey packet included the following material: a cover letter, a copy of the letter sent to their department chair, the questionnaire and two pages of detailed written instructions. The instructions included a list of clarifications for those items which during the telephone survey were most prone to misinterpretation and a stamped addressed envelope for returning the questionnaire.

The questionnaire had five content areas:

1. *Clinical interest.* Ratings were obtained on nine point scales of a) performance in

and b) enjoyment of clinical work, c) estimation of the percentage of current waking hours the student spent on clinical work, and d) estimation of the percentage of professional time the student ultimately hoped to spend on clinical work. First and second choices for the type of setting in which the student ultimately hoped to spend the majority of their professional time were also obtained.

2. *Research interest* (parallel to the above clinical portion).

3. *Teaching interest* (parallel to the above clinical portion).

4. *Scholarly productivity*. The number of papers students published (actually accepted for publication), submitted (or in preparation), and presented at a major professional meeting were obtained.

5. *Miscellaneous student and advisor characteristics*. These included demographic variables (e.g., sex, age, marital status, student's educational history, and parental occupational status), advisor's scholarly reputation as measured by major competitive grants and awards received, self-perceptions about motivational level and ability, and verbal ability, as measured by a 32-item multiple choice vocabulary test (for obvious reasons the vocabulary test was given to telephone but not mail survey subjects). The vocabulary test was included because it could be argued that verbal ability which is the best predictor of general intelligence, might be associated with scholarly productivity.

Checks for experimenter bias. After the survey was completed, telephone subjects were debriefed. As part of the debriefing process, 54 subjects (approximately 40% of the total telephone sample) were queried for suppositions regarding the hypotheses. This was considered important because the interviewer was not blind to the hypotheses. Only 15% (eight) of the subjects queried thought that the study was

concerned with relative interest and time allocated to research and clinical work. One subject informed the interviewer that previously run subjects had revealed that the study was concerned with the "Boulder Model". Correlational analyses indicated that knowledge of the hypotheses was unrelated to subjects' responses. In addition, the mail survey provided an important check. The interviewer did not interact personally with the mail survey subjects and thus had no opportunity to lead or guide these subjects. There was no difference between the telephone and mail survey subjects on the clinical, research and teaching interest, productivity, and student and advisor characteristic variables. Thus it is highly unlikely that findings discussed below are the result of demand characteristics or that the interviewer guided subjects' response patterns. During the debriefing, 89 (63.57%) subjects spontaneously offered comments regarding the efficacy of the Boulder Model for themselves and students at their respective programs. These responses were recorded.

Scholarly Reputation and Productivity of Program Faculty

Six measures of faculty scholarly reputation and productivity were obtained from a recent survey conducted by the Conference Board of Associated Research Councils (Jones, Lindzey & Coggeshall, 1982). These were: a) the mean rating of scholarly quality of program faculty, b) the mean rating on effectiveness of the program in educating research scholars/scientists, c) the fraction of program faculty holding research grants from major governmental sources (e.g., NIH, NSF), d) the total number of program faculty publications, e) the proportion of program faculty with one or more published articles, f) the proportion of program graduates who made a definite commitment for post-graduate employment in PhD granting universities.

Results

As discussed above, there were no differences between the mail and telephone subjects ruling out experimenter bias as a factor in the study. Data were therefore collapsed across these two groups for further analyses. The number of differences between various program types (private vs. public and large vs. small) were at chance level. Therefore, data were collapsed across these groups as well. Because they lacked experience in a given area, some students were unable to answer certain items. The proportion of missing data varied from item to item but was generally less than 5%.

Specialization Hypothesis: Individual Differences

Professional interests and scholarly productivity. Across programs, substantial support was obtained for the hypothesis that individual students choose to specialize in either clinical work or research and that only rarely do they choose a combination of the two. First, the four measures of research interest were generally inversely related to four measures of clinical interest (10 out of 16 coefficients exceeded $r = -.13$, $p < .05$; nine of these exceeded $r = -.23$, $p < .01$). For example, the percentage of professional time students stated they hoped to ultimately allocate to clinical work was highly inversely related to the percentage of time they hoped to allocate to research ($r(169) = -.62$, $p < .001$). Moreover, measures of research interest were positively correlated and measures of clinical interest generally inversely related to measures of scholarly productivity (see Table 2).

Insert Table 2 about here

Students' beliefs about the Boulder Model. The students surveyed offered overwhelming support for the specialization hypothesis. During the debriefing, 64.29% of 140 telephone survey subjects offered unsolicited comments upon hearing the specialization hypothesis. Of those commenting, 71.9% said they themselves were primarily research or clinical in orientation; 86% stated that they believed most students in their programs were primarily clinically or research oriented. Although 28.1% said they were Boulder-oriented, only 13.35% considered the Boulder Model generally successful at their program. Thus over half of the Boulder-oriented students considered the model generally unsuccessful at their programs. Although demand characteristics might have produced this extremely high percentage of agreement with the specialization hypothesis, there is evidence to suggest that these comments, in most cases, accurately reflect students' beliefs. There was no opportunity for the investigator to influence the mail survey subsample. As discussed above, these data do not differ from the telephone subsample data.

Specialization over time. There was evidence that the graduate school experience does not make students more Boulder-oriented and that specialization of interests and goals may in fact increase with level of training. For example, the absolute difference between ratings on enjoyment of research and clinical work was directly related to current year in graduate school (r (170) = .20, $p < .01$). Moreover, students' orientations became not only more specialized but specifically more clinical

with training. For example, the signed difference between the clinical and research performance ratings correlated r (152) = .29, $p < .001$ with year in program. To compute the signed difference, the research rating was subtracted from the clinical rating and the sign was maintained; thus a high positive value indicated a strong clinical orientation. It should be noted that although these correlations were in the expected direction, they were quite modest in magnitude.

Predominant orientation. At all levels of training most students were clinically-oriented. The majority (68.75%) of those students who spontaneously reported that they believed the Boulder Model was generally unsuccessful, and the majority (71%) of the total sample, stated they ultimately hoped to spend more of their professional time on clinical work than on research. Moreover, this difference was far from trivial. The mean percentage of professional time clinically-oriented students stated they ultimately hoped to allot to clinical work was 60.4% compared with a mean of 13.1% for research (t (124) = 22.01, $p < .001$). Similarly, most students gave a clinical setting as their first choice (68.1%) and second choice (66%) for primary post-graduate employment.

Finally, given that fewer students were research-oriented than were clinically-oriented and given that research interest variables are associated with measures of scholarly productivity, it is not surprising that a minority of students accounted for the vast majority of all scholarly work. Less than half (34.2%) of the sample accounted for over three-fourths (77.33%) of the total number of papers submitted or in preparation. Less than one-fourth (14%) of the sample accounted for nearly three-fourths (70.1%) of the total number of publications. Less than one-fourth (17.7%)

accounted for nearly three-quarters (71.1%) of the total number of presentations. This pattern replicates those found in similar surveys of PhD level clinical psychologists (Kelly et al., 1978).

Advisor characteristics. Several advisor characteristics were related to the student interest and productivity variables. Level of student scholarly productivity (numbers of papers published, presented and submitted) and research interest were associated with advisor scholarly reputation, which was measured on a three point scale (1 = advisor had received neither major competitive grants (e.g., NIMH) nor awards (e.g., APA Distinguished Scientific Contribution), 2 = advisor had received either grants or awards, and 3 = advisor had received both grants and awards). Advisor scholarly reputation correlated from .21 ($p < .05$; df = 65) to .34 ($p < .01$; df = 63) with the student scholarly productivity and research interest variables. Also, as hypothesized, there were generally inverse, albeit modest, relationships among advisor scholarly reputation and the clinical interest variables. These coefficients ranged from -.15 ($p = .114$; df = 63) to -.24 ($p < .05$; df = 65).

Specialization Hypothesis: Program Differences

Students' Interests. Program means differed widely with respect to level of student interest in research (e.g. percentage of time students ultimately hoped to spend on research, $F(15, 160) = 2.77$, $p < .001$) and to a lesser degree, interest in clinical work (e.g. percentage of time students ultimately hoped to spend on clinical work, $F(15, 160) = 2.46$, $p < .01$). In general, program means on measures of level of clinical interest were higher than means on measures of research interest. For example, program means for the percentage of time students ultimately hoped to spend on

research and clinical work ranged from 8% to 42% and from 31% to 67%, respectively. In programs where scholarly productivity and interest in research were relatively high, clinical interest was relatively low and vice versa. For example, the mean percentage of time students ultimately hope to spend on research and on clinical work were inversely related (r (13) = -.86 $p < .001$). Teaching interest was not related to either research or clinical interest. Program means for the mean percentage of time students ultimately hope to allot to research, teaching and clinical work are shown in Figure 1. Other interest variable triads (e.g., enjoyment ratings) produced similar curves.

Insert Figure 1 about here

Students' scholarly productivity. Programs did not differ significantly on number of publications. But given that students are just beginning their careers and given the generally lengthy time lag from submission to publication, the number of papers submitted is perhaps a more valid measure of scholarly productivity among graduate students than publications. Program means for number of papers submitted (or in preparation) ranged from 0.6 to 3.0 ($F(15, 16)$ = 2.99, $p < .001$). Program means on number of presentations at major professional conferences, which ranged from 0.2 to 3.8, also differed significantly ($F(15, 16)$ = 2.39, $p < .01$). Not surprisingly, programs high in research interest variables tended to be higher on measures of scholarly productivity than programs low on research interest. Similarly, programs with relatively high means on research interest and scholarly productivity

variables tended to have relatively low means on clinical interest variables and vice versa.

In summary, it is clear that programs differ widely with respect to student interest in research and clinical work. It is also clear that on the average students at most programs (14 out of 16) were primarily clinically oriented but it is unclear why this was not the case at two programs. As can be seen in Figure 1, the clinical and research interest means for two programs are close and for one the research mean was higher than the clinical mean.

Program reputation. Program means for student research interest measures were associated with overall program faculty scholarly reputation and productivity. These were measured by mean rating of scholarly quality of program faculty, mean rating on effectiveness of the program in educating research scholars/scientists, fraction of faculty holding research grants, total number of program faculty publications, proportion of faculty with one or more published articles, and proportion of program graduates who made a definite commitment for post-graduate employment in PhD granting universities. Product moment coefficients ranged from .34 to .85 with 19 out of 24 coefficients exceeding $r = .43$, $p < .05$. Overall, faculty scholarly reputation and productivity were unrelated to program means on student scholarly productivity measures. It is possible that these productivity rates do not reflect potential productivity as well as the interest variables. For example, students may be involved in several research projects but not find the time to write up and submit their work until after graduation. The following section, therefore, is concerned with the prediction of research interest.

Predicting research interest

It is clear from the preceding findings that it is relatively more difficult to find students who anticipate developing an active research programs after graduation than it is to find students who plan to continue with their clinical work. Given this, it is of interest to predict which students plan to be active researchers. Two forced entry multiple regression equations were computed to predict the amount of professional time students ultimately hope to allocate to research.

In the first equation eight objective measures were utilized: program scholarly reputation (as measured by the six program reputation variables), advisor scholarly reputation (as measured by a three point scale computed in the manner detailed above) and number of papers a student submitted or had in preparation for publication. Together these eight variables accounted for 30% of the variance in students' estimates for the amount of time they ultimately plan to devote to research ($R = .55$, $p < .01$). In the second equation two subjective variables, ratings on the level of enjoyment of research and of clinical work, were used in addition, to the eight objective variables. These 10 variables accounted for 52% of the variance in the research ultimate time estimate($R = .72$, $p < .001$). Thus, program and advisor characteristics, in conjunction with a student's own interests, account for a sizable proportion of the variance in the amount of professional time an individual student planned to allocate to research.

Miscellaneous student characteristics

A variety of student and characteristics were examined with respect to students' professional interests and scholarly productivity. There were two measures of motivation, three measures of self-perceptions about ability, and one measure of verbal

ability (a vocabulary test). In addition demographic information was collected (e.g. marital status, current age, prestige of undergraduate college, students' honors and awards, parental educational and occupational history). None of these variables related in a systematic way to the research interest, clinical interest and scholarly productivity variables.

Discussion

Summary of Major Findings

The career goals, professional interests and scholarly productivity of 176 clinical psychology graduate students from 16 APA-approved clinical PhD programs were examined. Across programs, substantial support was obtained for the hypothesis that individual students choose to specialize in either clinical work or research and that only rarely do they choose a combination of the two. First, measures of research interest were either inversely related or unrelated to measures of clinical interest. Moreover, these professional interests were associated with scholarly productivity. Measures of research interest were positively correlated and measures of clinical interest generally inversely related to measures of scholarly productivity. Second, during debriefing, the students offered overwhelming unsolicited support for the specialization hypothesis. Finally, there was evidence that the graduate school experience does not make students more Boulder-oriented and that specialization of interests and goals may in fact increase with level of training.

The respondents, however, did not select clinical and research orientations with equal frequency. Rather, as has been found with PhD level clinical psychologists (e.g., Garfield & Kurtz, 1976; Kelly et al., 1978) a predominantly clinical orientation

emerged. There was some evidence, however, that students enter graduate school already so inclined. For example, across training levels, 71% stated they hoped to spend more professional time on clinical work than on research. In accordance with this finding, a minority of students accounted for the vast majority of all scholarly work.

Programs differed widely with respect to level of student scholarly productivity, interest in research and to a lesser degree, interest in clinical work. In programs where scholarly productivity and interest in research were relatively high, clinical interest was relatively low and vice versa. In general, program means on measures of level of clinical interest were higher than means on measures of research interest. For one program, however, this difference was quite small; for another, interest in research was, on the average, stronger than interest in clinical work. It is interesting that the single program in which students were more research oriented, is in a department that is not known for its superb research overall but has faculty who are leaders in clinical research. It is equally interesting that at another department that is well known for its superb experimental faculty, the clinical students in our study had the same pattern of professional interests as students at departments that do not have strong experimental programs.

It was also found that program means on student research interest measures were associated with overall program faculty scholarly reputation and productivity. In contrast, overall faculty scholarly reputation and productivity were unrelated to program means on student scholarly productivity measures. Quality of student scholarly work, however, was not assessed. Across programs, individual student

scholarly productivity was related to the scholarly reputation of a student's advisor. Thus, it would appear that scholarly and productive faculty, in that they provide role models, foster research interest and hence scholarly productivity among their advisees. In addition, it was found that these reputation and productivity variables, in conjunction with a student's own level of scholarly productivity and enjoyment of research and clinical work, accounted for over 50% of the variance in the percentage of professional time a student planned to allocate to research.

Conclusions

There are two plausible explanations for the observed clinical-research dichotomy. First, it is possible that the role of the scientist and that of the practitioner are incompatible. The belief that it is difficult to succeed in two fields is an old and venerable one. Huarte (1594/1959), a 16th century Spanish scholar proposed, "I have alwaies held it for a matter certaine, that no man can be perfectly seene in two arts, without failing in one of them *[sic]*". He proposed that the brain has three primary components (memory, imagination and understanding) and that success in different vocations is relatively more dependent on one of the three. Three centuries later, William James (1890/1950) came to a similar conclusion and wrote that, "...minds of genius may be divided into two sorts...The first are the abstract reasoners...; the latter are ...the men of intuitions" (p. 361). And in fact, there is substantial empirical evidence to support the hypothesis that there are inherent fundamental differences in the ways in which researchers and practitioners construe the world and thus, set priorities (Clark cited in Campbell, 1965; Garfield & Kurtz, 1976; Jones cited in Hirschberg & Itkin, 1978; Kelly & Fiske, 1950; Kelly & Goldberg, 1959; Thorndike,

1954, 1955).

On the other hand, it is possible that the roles of the scientist and the practitioner may not be inherently incompatible. Rather, the differences observed between the researcher and the clinician may be acquired in response to external pressures. For example, subtle environmental pressures, such as graduate program training emphasis and role models, and not so subtle pressures, such as the relative availability of employment in clinical service and academic settings, may shape students' orientations. These two explanations for the research-clinical dichotomy (individual differences and external pressures) are not mutually exclusive and both may be, in part, correct.

The positive relationships between program scholarly reputation and level of student interest in research, between advisor scholarly reputation and level of student scholarly productivity and interest in research, and between degree of professional interest specialization and level of training all indicate that programs and advisors do shape students' professional orientation. Moreover, as discussed above, there is evidence that, in general, programs foster a clinical orientation. But there is also evidence that students probably enter graduate school already clinically inclined. Graduate students enter PhD programs with nearly two decades of previous education. Some of these earlier educational experiences, in particular undergraduate training, may play a role in the development of students' professional aspirations. It is, however, unlikely that undergraduate and graduate programs are entirely responsible for students' generally specialized orientations. First, the academic job market has been limited for over a decade. Second, students, by virtue of their particular talents and personalities,

may be relatively more suited to either a scientific or applied career. Thus three external sources of influence (employment prospects, graduate training, and undergraduate training) and two person centered sources (abilities and personality characteristics) may serve to shape students' professional orientations.

Finally there were some students, albeit a minority, who did describe themselves as Boulder-oriented. There were both self-described scientist-practitioners and specialists in every program. This indicates first, that programs are not entirely responsible for students' orientations and second, that research and clinical orientations may not be incompatible. But, given that the self-described scientist-practitioners are students, their actual ability to integrate applied and scientific work has not been fully tested. Even if some do manage to combine applied and scientific work, it is possible that these jacks of all psychological trades will be masters of none. Although our findings suggest that the Boulder Model may be an unrealistic goal for most individuals in graduate programs as they currently exist, the concept that clinical research and practice are mutually enhancing remains sound. And, we strongly believe that quality clinical training must include a firm grounding in basic psychological science.

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Table 1

Program Types and their Proportions in the Population and in the Sample

	Population	Sample
Program Type	Proportion[a]	Proportion
Private[b]	.19	.19
Small[c], Public University	.46	.43
Large[d], Public University	.34	.38
	n[e] = 93	n = 16

[a]Proportions do not add up to 1.00 because of rounding error. [b]Initially, private programs were stratified by size as well but it was more difficult to secure private programs; the majority of declining programs were private. [c]Small, 10 or less students students in the 1981 entering class. [d]Large, more than 10 students. [e]There were 102 APA approved clinical psychology doctoral programs. Eight were excluded because information regarding program characteristics was incomplete or out of date. Case Western Reserve University also was excluded because it was used in the pilot studies.

Table 2

Correlations Between the Scholarly Productivity Variables and the Research and Clinical Interest Variables

Measure	Number of Publications	Number of Submissions[a]	Number of Presentations[b]
Performance Ratings			
Research	.29***	.34***	.25***
	(df=160)	(df=161)	(df=160)
Clinical	-.06	.08	.02
	(df=164)	(df=165)	(df=164)
Current Time			
Research	.35***	.40***	.25***
	(df=171)	(df=172)	(df=171)
Clinical	-.13*	-.06	-.05
	(df=172)	(df=172)	(df=172)
Enjoyment Ratings			
Research	.23***	.20**	.10
	(df=169)	(df=170)	(df=169)
Clinical	-.24**	-.15*	-.10
	(df=168)	(df=169)	(df=168)
Ultimate Desired Time			
Research	.24**	.22**	.12
	(df=172)	(df=173)	(df=172)

Clinical	-.24**	-.19**	-.21**
	(df=172)	(df=173)	(df=172)

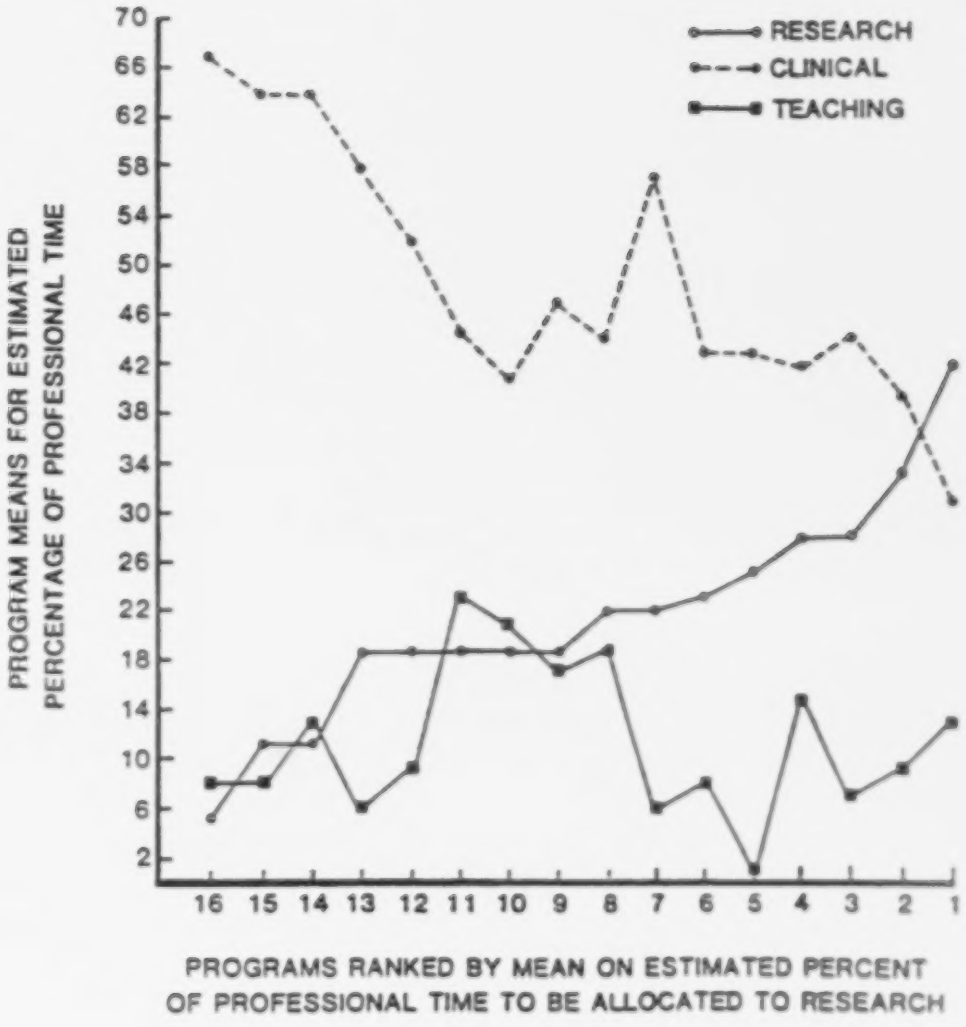
[a]Publications refers to papers in print and/or in press.

[b]Submissions refers to papers submitted or in preparation.

* p<.05 ** p<.01 *** p<.001

Figure Caption

Figure 1. Program means for the percentage of professional time students estimate they will spend on research, clinical work and teaching.


RESEARCH
CLINICAL
TEACHING
PROGRAM MEANS FOR ESTIMATED PERCENTAGE OF PROFESSIONAL TIME
70
66
62
58
54
50
46
42
38
34
30
26
22
18
14
10
6
2
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
PROGRAMS RANKED BY MEAN ON ESTIMATED PERCENT OF PROFESSIONAL TIME TO BE ALLOCATED TO RESEARCH